INTERIM MEASURES COMPLETION REPORT

McDonnell Douglas Aerospace
U.S. EPA I.D. No. MOD000818963
Tract I Facility
Hazelwood, Missouri

Prepared for:

McDonnell Douglas Aerospace
A Wholly Owned Subsidiary of The Boeing Company
Environmental & Hazardous Material Services
8901 Airport Road
Building 110, Level 1, MC1111099
St. Louis, Missouri 63134

Prepared by:

Heritage Environmental Services, Inc.
Chicago Division
15330 Canal Bank Road
Lemont, Illinois 60439

December 18, 1997

Heritage Environmental Services, Inc.

The Boeing Company
P.O. Box 516
St. Louis, MO 63166-0516
(314) 232-0232 TELEX 44-857

December 23, 1997
464C-4297-JWH

BOEING

Ms. JoAnn Heiman, Chief
RCRA Permitting & Compliance Branch
U.S. Environmental Protection Agency Region VII
Air, RCRA and Toxics Division
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Ms. Heiman:

Enclosed are two copies of the Interim Measures Report as required by the Corrective Action Conditions of the Hazardous Waste Management Facility Permit, # MOD 000 818 963, dated March 5, 1997. Three copies of the report have been submitted to the Missouri Department of Natural Resources as required under the terms of the permit.

Please contact me should you need additional information.

Sincerely,

Joe Haake

Joseph W. Haake, Group Manager
Environmental and Hazardous Materials Services
Dept. 464C, Bldg. 110, Mailcode S111-1099
(314) 232-6941

JWH:kcb

HERITAGE ENVIRONMENTAL SERVICES, INC.

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1.0 INTRODUCTION

Subsequent to the completion of a Resource Conservation and Recovery Act: Facility Assessment (RFA) performed at the McDonnell Douglas Aerospace (MDA) Track I Facility (US EPA ID No. MOD000818963) by Science Applications International Corporation (SAIC; RFA Report Aug. 14, 1995), the United States Environmental Protection Agency (USEPA) and the Missouri Department of Natural Resources (MDNR) directed MDA to prepare and implement Interim Corrective Action Measures at four (4) Solid Waste Management Units (SWMU) at the facility. The SWMUs were identified as SWMU #10 (Current Waste Oil Tank located at Building 5), SWMU #22 (Paint Booth Satellite Accumulation Area located at Building 2), SWMU #26 (former Less-Than-90-Day Storage Area located near Building 40), and SWMU #28 (Electrical Power Transformer located near Building 5).

In response to the USEPA and MDNR directive, MDA contracted Heritage Environmental Services, Inc. (Heritage) to prepare an Interim Measures Plan for submittal to USEPA and MDNR.

Upon approval of the Interim Measures Plan by USEPA and MDNR, MDA contracted Heritage to implement the plan. Interim Corrective Action Activities were performed at the site between October 10, 1997 through November 11, 1997.

2.0 INTERIM MEASURE ACTIVITIES

The following sections provide documentation of the activities performed at each of the Solid Waste Management Units to address the concerns posed by US EPA and MDNR.

2.1 SWMU #10

Solid Waste Management Unit #10 consisted of a 375-gallon capacity AST utilized to containerize compressor oil (waste oil) that was recovered from condensate from an oil-lubricated steam-driven air compressor.

Interim Measure Activities at this SWMU included the decommissioning of the 375-gallon AST and installation of a __-gallon AST at a location interior to Building 5. In addition to the replacement and relocation of the waste oil AST, the area of the former AST was cleaned.

The new 275 gallon capacity tank is made of steel and is positioned within a polyethylene secondary containment unit. Exhaust steam and oil from traps leaving steam driven compressors in Building 5 is collected in a surge tank. The oil is cooled through a heat exchanger to promote separation and then flows into an oil/water separator. Water drains from the separator to the industrial sewer line leading to the on-site wastewater treatment plant. Oil is pumped to the 275 gallon storage tank. When the tank is full, the oil is pumped into drums for proper disposition.

On November 12, 1997, the 375-gallon AST was decommissioned. Decommissioning activities included the following.

- Liquids were removed from the AST utilizing a vacuum truck and suction hose. Vacuum equipment and AST were static grounded to prevent static discharge during the transfer activities.
- After completion of the removal of the waste oil from the AST, the interior atmosphere of the AST was monitored for LEL, O_2, and hydrocarbon vapors (ppm) utilizing a GasTech® meter to evaluate the AST interior atmosphere for potential hazardous conditions.
- The top of the AST was cut open utilizing a 30-pound pneumatic chisel hammer.

- Scale and tank-solids were removed from the AST interior. The interior was cleaned utilizing a citra-clean solution and high-pressure water rinse.
- Tank cleaning rinseates were removed from the AST utilizing a drum vacuum and suction hose and containerized in a steel 55-gallon drum.
- The asphalt constructed secondary containment berm and concrete surface underlying the AST was cleaned utilizing a low pressure citra-clean and water solution wash. Subsequent to the surface cleaning activities, the berm was removed and containerized into a steel hoppers.
- After completion of the asphalt removal activities, the exposed concrete surface was final-cleaned utilizing a high pressure water wash. The former AST area, after completion of the cleaning activities, is shown in Appendix 1, Photograph 6.

Wastewater, generated as a result of the cleaning activities, was transported to an oil-water separator at MDA's Tract I and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials. Asphalt, generated as a result of the cleaning activities, was transported to the construction debris management area and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials. Expendable PPE was disposed as a Class D Municipal Waste and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

2.2 SWMU #22

Solid Waste Management Unit #22 consisted of a satellite accumulation area for wastes generated from painting operations performed at Building #2. Specific concerns for this SWMU were the potential for impact of paint solvents to underlying soil and groundwater as a result of existing cracks in the asphalt surface cover at the SWMU. In addition, the condition of a former sump, which had been previously abandoned and boarded up, was investigated and addressed as necessary.

Interim Measure Activities at this SWMU included the placement of an additional lift of asphalt surface cover material to effectively seal existing cracks in the former surface grade. The surface area covered by the resealing activities measured 25 ft. by 25 ft. (625 square feet). Approximately 1-inch lift of compressed asphalt was utilized as a surface seal.

Investigation of the abandoned sump on October 3, 1997 identified the sump to be a former stormwater drain trap. The stormwater trap measured 48-inches by 30-inches. The base of the sump was 51-inches below surface grade. Upon removal of the wood-timber surface cover, the sump was found to contain approximately 19-inches of standing water overlaying approximately 21-inches of liquid-sludge.

Removed wood-timber was washed to remove any paint residues utilizing a high pressure water wash.

Water and sludge were removed from the sump utilizing a drum vacuum and suction hose. Removed sludge was containerized in a steel 55-gallon drum. The sump was final washed utilizing a low pressure citra-clean and water solution wash followed by a high-pressure water rinse.

After completion of the cleaning activities at the sump, the sump cavity was backfilled with 1-inch clean stone to 6-inches below surface grade. The sump was sealed at surface grade utilizing a 6-inch poured-concrete pad. Photographs of the sump area during the cleanup activities are shown in Appendix 1, Photographs 7 through 14.

Wastewater and sludges, generated as a result of the cleaning activities, was transported to the oil-water separator at MDA's on-site wastewater treatment plant and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials. Timber, generated as a result of the cleaning activities, was transported to the construction debris management area and

managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials. Expendable PPE was disposed as a Class D Municipal Waste and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

2.3 SWMU #26

The former Solid Waste Management Unit #26 consisted of a former Less-Than-90-Day Storage Area for drummed waste solvents, paints, and oils transported from Satellite Accumulation Areas in Building #40. Specifically, SWMU #26 consisted of a small, prefabricated, corrugated steel constructed building with a raised steel grated floor.

Specific concerns for this SWMU were the potential for impact of paint solvents to underlying soil and groundwater as a result of existing cracks in the concrete surface cover at the former SWMU.

Interim Measure Activities at this SWMU included the cleaning and sealing of existing cracks at the former SWMU.

On October 10, 1997, cleaning and sealing activities were performed at former SWMU #26. Existing surface cracks were cleaned of lose materials utilizing a high pressure water wash and dried utilizing compressed air.

Wastewaters generated as a result of the cleanup activities were removed from the concrete surface, to the extent possible, utilizing a drum vacuum and suction hose. Collected wastewater was containerized in a steel 55-gallon drum.

Upon completion of the cleaning activities, the cracks were sealed utilizing a concrete-caulk sealant. Photographs showing the stages of cleanup and crack sealing are shown in Appendix 1, Photographs 16 through 25.

Wastewater, generated as a result of the cleaning activities, was transported to the oil-water separator at MDA's on-site wastewater treatment plant and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials. Expendable PPE was disposed as a Class D Municipal Waste and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

2.4 SWMU #28

The former Solid Waste Management Unit #28 consisted of a former power transformer station located outside of the northeast corner of Building #6.

Specific concerns for this SWMU were the potential for transformer oil, containing PCB's, to impact underlying soil and groundwater. This concern was a result of apparent leakage of oil from the transformer as exhibited by oil stains on the concrete surface pad at the base of the former transformer. In addition, the oil stain at the west end of the concrete pad appeared to extend beyond the edge of the concrete pad and impact the surface gravel along the west perimeter of the concrete pad as shown in Appendix 1, Photograph 26. The oil stain at the east side of the concrete pad did appear to extend to the limit of the concrete pad but not extend beyond this perimeter as shown in Appendix 1, Photograph 28.

Interim Measure Activities at this SWMU included the decommissioning and removal of the power transformer, cleaning of the concrete pad, and removal of impacted gravel and underlying soil as necessary to remove impacted soil. At the completion of these activities, soil samples were collected for analysis of PCB's. The sample results were utilized to evaluate the necessity for additional corrective action measures at the SWMU.

The power transformer formerly located at SWMU #28 was removed from the concrete pad and transported to the PCB solid waste management area at the Track

I Facility for subsequent management in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

On October 7, 1997, the concrete pad was cleaned utilizing an enzyme-active cleaning solution designed for PCB removal from concrete and steel surfaces; Less-Than-10. The areas of the concrete pad exhibiting oil staining were soaked with the Less-Than-10 solution. After a sufficient saturation time, the surface stain was scrubbed with a stiff brush and the cleaning solution was vacuumed from the surface. This procedure of soaking, scrubbing, and vacuum removal was repeated until satisfactory results were obtained.

Gravel surrounding the west and south-west perimeter of the concrete, which visibly exhibited indications of oil-staining, was removed and containerized in a steel 55-gallon drum. Soil underlying the gravel surface did not exhibit a visible indication of oil-impact and as a result, soil was not excavated.

After completion of the removal of impacted gravel, soil samples were collected for laboratory analysis of PCB compounds to evaluate the necessity for additional corrective action. Soil samples were collected at the west and south-west perimeter of the concrete pad which exhibited the greatest potential for impact from transformer oil. Soil samples were collected from 0 to 12 inches and from 12 to 18-inches below surface grade. The 0 to 12-inch sample interval, from each sample location, was composited. The 12 to 18-inch sample intervals, from each location, were maintained as individual samples.

Soil samples collected for laboratory analysis were collected into one 6-ounce (PNA) glass jars. Laboratory soil samples were packed for zero-headspace and labeled at the time of collection indicating sample collection location, sample ID, collection date and time, and requested laboratory analysis. To prevent sample cross-contamination, single-use latex sample gloves were utilized by the sample collector during all sample collection and handling activities. The collected

laboratory soil sample was placed in a ice packed sample cooler, to maintain sample temperature at approximately 4°F, until shipment to the receiving laboratory was completed. Laboratory samples were logged on laboratory sample Chain of Custody Forms and transported to the receiving laboratory under Chain of Custody Documentation procedures. Laboratory Certificate of Analysis, Sample Certification Forms and Chain of Custody Documents are provided in Appendix 2.

Photographs of the concrete pad cleaning activities are presented in Appendix 1, Photographs 26 through 31.

Wastewater, solids, and expendable PPE generated as a result of the activities at SWMU #28 were transported to the PCB solid waste management area at the Track I Facility for subsequent management in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

3.0 LABORATORY RESULTS

Laboratory samples were collected at SWMU #28. Soil samples collected at SWMU #28 were submitted to Environmental Analysis, Inc. for analysis of PCB constituents utilizing SW846-8080 methodology. Laboratory Certificate of Analysis for submitted soil samples are provided in Appendix 2.

The results of the laboratory analysis on the submitted soil samples indicated PCB (Arochlor 1260) present in the 0 to 12-inch composite sample at a concentration of 1.4 mg/kg. Laboratory results from the samples submitted from the 12 to 18-inch interval were reported as below the method detection limits of 0.2 mg/kg.

3.1 Additional Excavation at SWMU #28

Since the laboratory result of 1.4 mg/kg PCB on the 10 to 12-inch composite sample exceeded the Missouri Department of Health any-use soil criteria of 0.65 mg/kg for PCBs, additional soil excavation activities were performed along the perimeter of the concrete pad. PCB impacted soil was excavated to a depth of 18-inches below surface grade and containerized in a steel 55-gallon drum. As a result of the laboratory analysis from the previously submitted soil samples, which indicated PCB constituents were not present above method detection limits at a depth 18-inches below surface grade, additional soil samples were not collected at the completion of the excavation activity. The location of the collected soil samples and limits of the excavation is shown in Figure 1, Appendix 3.

Soils and expendable PPE generated as a result of the excavation activities at SWMU #28 were transported to the PCB solid waste management area at the Track I Facility for subsequent management in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

4.0 CONCLUSIONS

Based on the activities performed at the above SWMU's, the following conclusions are presented.

4.1 SWMU #10

- Installation of the new waste oil AST and secondary containment system has increased the efficiency of the SWMU to handle waste materials and minimize potential releases from the system.
- The new location for the AST provides for improved house keeping at the SWMU by placement of the AST components closer to the compressor system.

- The former AST and secondary containment berm were cleaned, removed, and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

- A concrete pad was present beneath the former AST.

- A final surface cleaning of the exposed concrete pad was performed utilizing a high pressure citra-clean and water wash.

- Additional Interim Corrective Action Measures are not considered necessary at SWMU #10.

4.2 SWMU #22

- Surface cracks in the area of SWMU #22 were sealed utilizing placement of a 1-inch overlay of new asphalt.

- A former abandoned sump was cleaned, backfilled with clean stone, and sealed utilizing a 6-inch poured concrete cap.

- Wastewater, solids, and debris were cleaned or removed and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

- Additional Interim Corrective Action Measures are not considered necessary at SWMU #22.

4.3 Former SWMU #26

- Existing cracks in the surface concrete in the area of former SWMU #26 were cleaned and sealed.

- Wastewater was managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.

- Additional Interim Corrective Action Measures are not considered necessary at former SWMU #26.

4.4 SWMU #28

- The power transformer unit was removed from the SWMU and decommissioned.
- The concrete pad, underlying the former power transformer was cleaned utilizing an enzyme solution specifically designed for PCB removal from concrete and metal surfaces.
- Soil samples were collected at the SWMU for analysis of PCB constituents.
- Transformer-oil impacted gravel and soil was excavated, containerized and removed from the SWMU.
- Laboratory results from submitted soil samples reported PCB concentrations were below method detection limits (0.2 mg/kg) at the floor of the excavation (18-inches below surface grade).
- Wastewater, solids, and debris were cleaned or removed, and managed in accordance with existing operation, maintenance, and monitoring program requirements for these materials.
- Additional Interim Corrective Action Measures are not considered necessary at SWMU #28.

APPENDIX 1

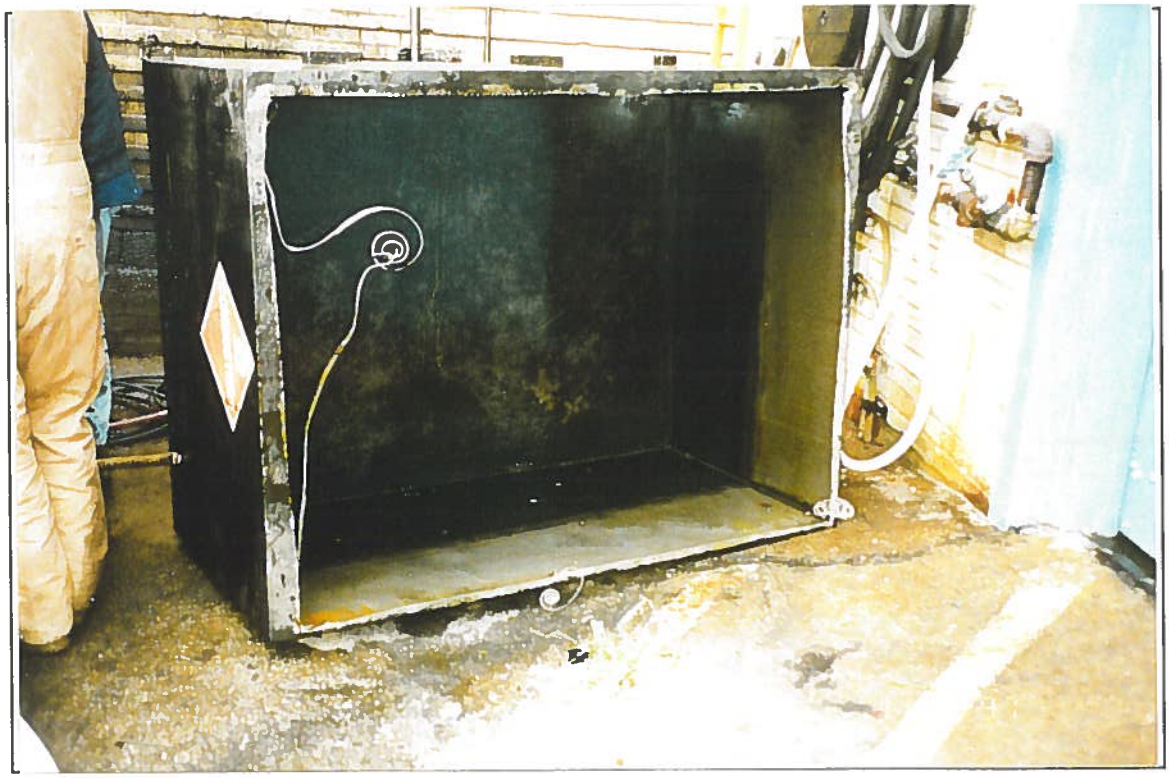
Photographs

PHOTOGRAPH 1 (ABOVE): View of 375 gallon AST utilized to containerize recovered compressor oil. Vacuum tanker utilized to remove and transport waste compressor oil can be seen at left. Absorbent material is shown within and right of asphalt constructed secondary containment berm for AST.

PHOTOGRAPH 2 (BELOW): Additional view of waste compressor oil AST. Pneumatic chisel hammer utilized to cut open the AST can be seen at lower left.

PHOTOGRAPH 3 (ABOVE): Close up view of AST.

PHOTOGRAPH 4 (BELOW): View of AST after removal of top and interior cleaning.



PHOTOGRAPH 5 (ABOVE): View of removal of asphalt secondary containment berm.

PHOTOGRAPH 6 (BELOW): View of former AST area after completion of area cleanup. Rough surface in concrete pad is the result of high pressure water (scrabbling").

PHOTOGRAPH 7 (ABOVE): View of abandoned sump prior to investigative activities. Placement of new asphalt surface material can be seen around perimeter of sump. Asphalt resurface measured approximately 1 inch thick (compressed).

PHOTOGRAPH 8 (ABOVE): View of sump after removal of boards.

PHOTOGRAPH 9 (ABOVE): View of sump at SWMU #22 after removal of standing water and exposure of underlaying solids surface.

PHOTOGRAPH 10 (ABOVE): View of sump at SWMU #22 after removal of solids.

PHOTOGRAPH 11 (ABOVE): View of sump at SWMU #22 after completion of final clean up of sump floor, walls, and exposed piping.

PHOTOGRAPH 12 (ABOVE): Additional view of sump at SWMU #22 after completion of final clean up of sump floor, walls, and piping. Note piping at top of photograph was capped at time of previous abandonment.

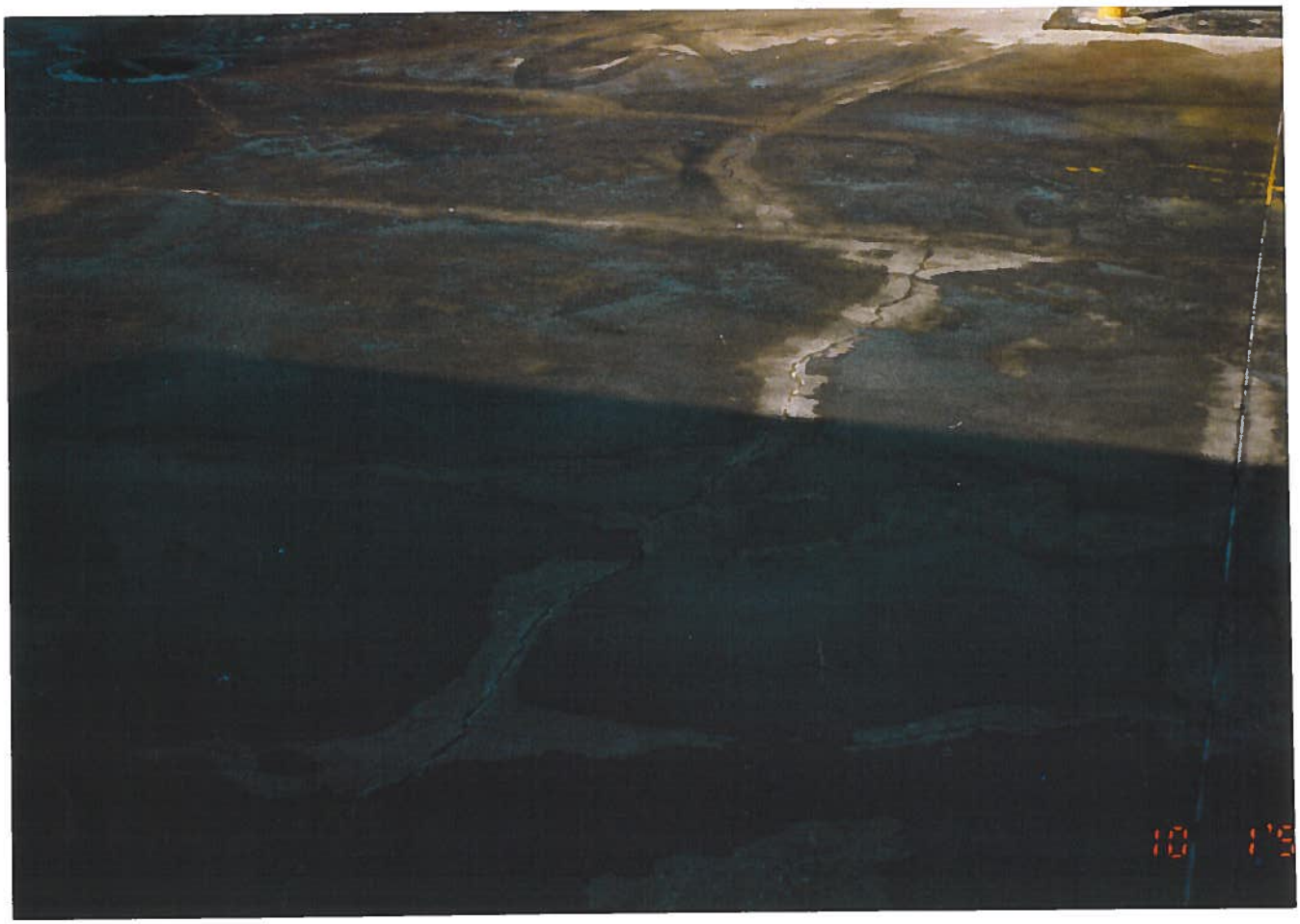
PHOTOGRAPH 13 (ABOVE): View of sump at SWMU #22 after placement of granular rock backfill and prior to concrete surface pad.

PHOTOGRAPH 14 (ABOVE): View of sump at SWMU #22 after placement of concrete surface pad.

PHOTOGRAPH 15 (ABOVE): View of surface cracks in concrete surface at SWMU #26 prior to cleaning and sealing.

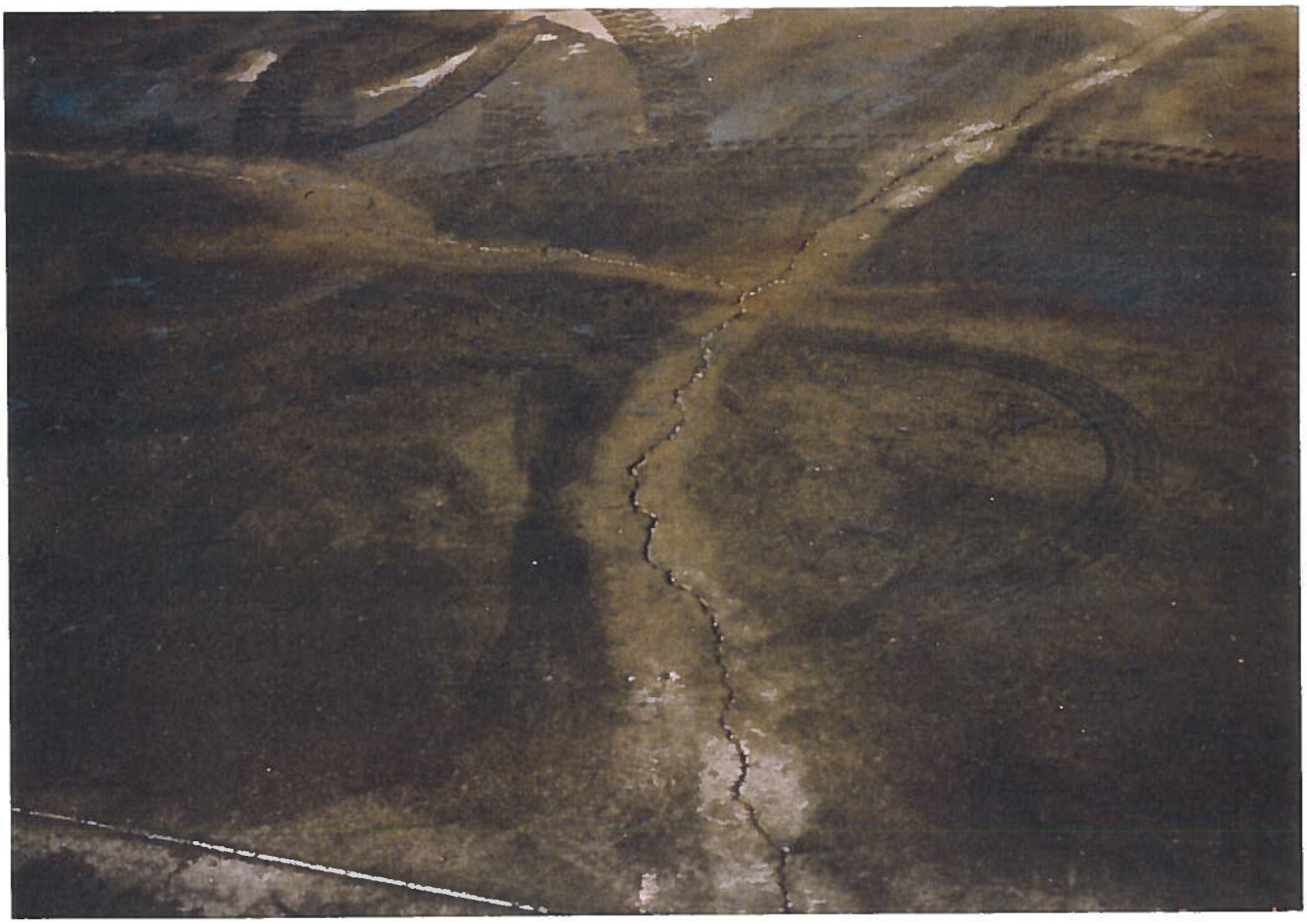
PHOTOGRAPH 16 (ABOVE): View of surface cracks in concrete surface at SWMU #26 prior to cleaning and sealing.

PHOTOGRAPH 17 (ABOVE): View of surface cracks in concrete surface at SWMU #26 prior to cleaning and sealing.

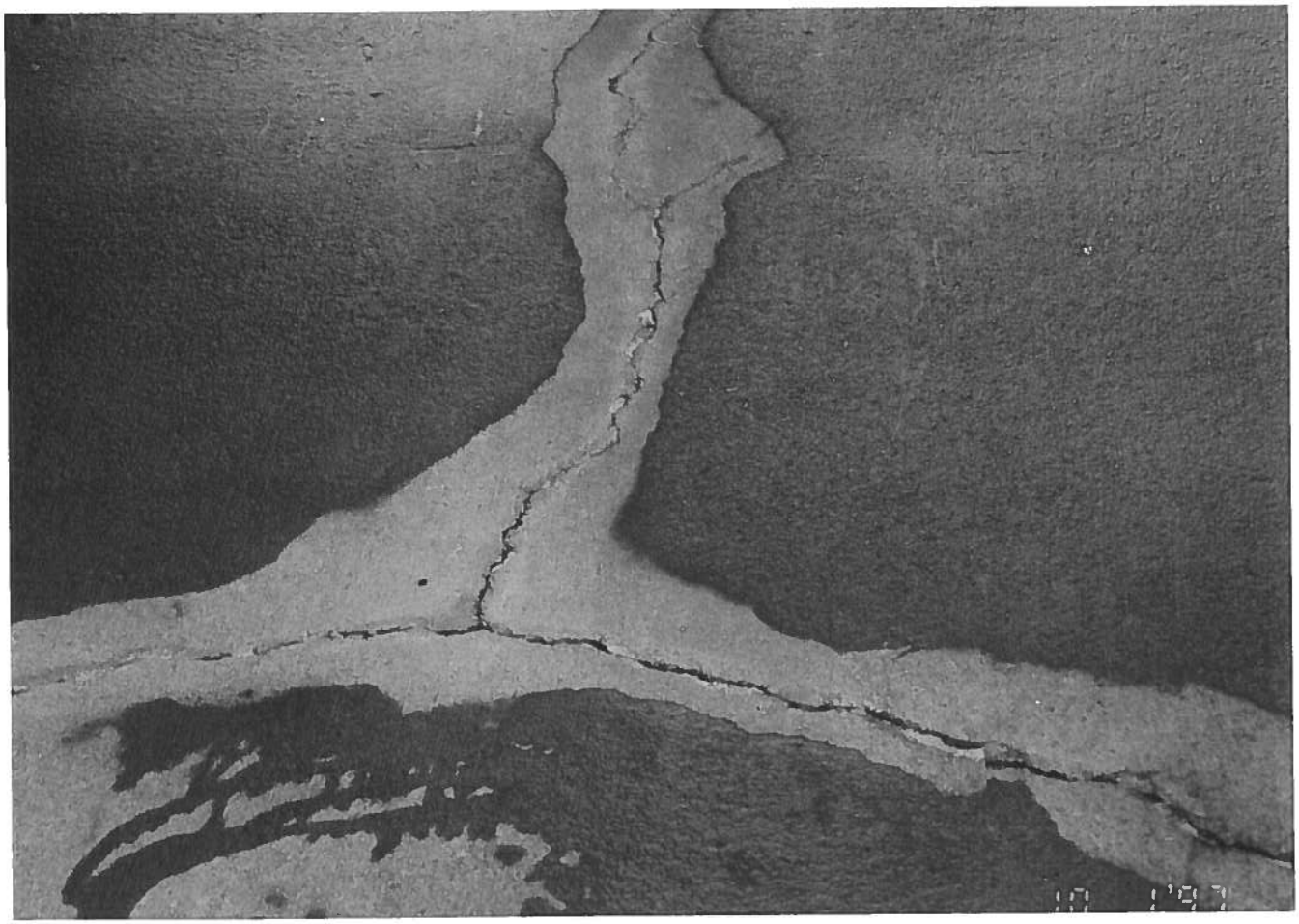


PHOTOGRAPH 18 (ABOVE): View of surface cracks in concrete surface at SWMU #26 after cleaning and prior to sealing.

PHOTOGRAPH 19 (ABOVE): View of surface cracks in concrete surface at SWMU #26 after cleaning and prior to sealing.



PHOTOGRAPH 20 (ABOVE): View of surface cracks in concrete surface at SWMU #26 after cleaning and prior to sealing.

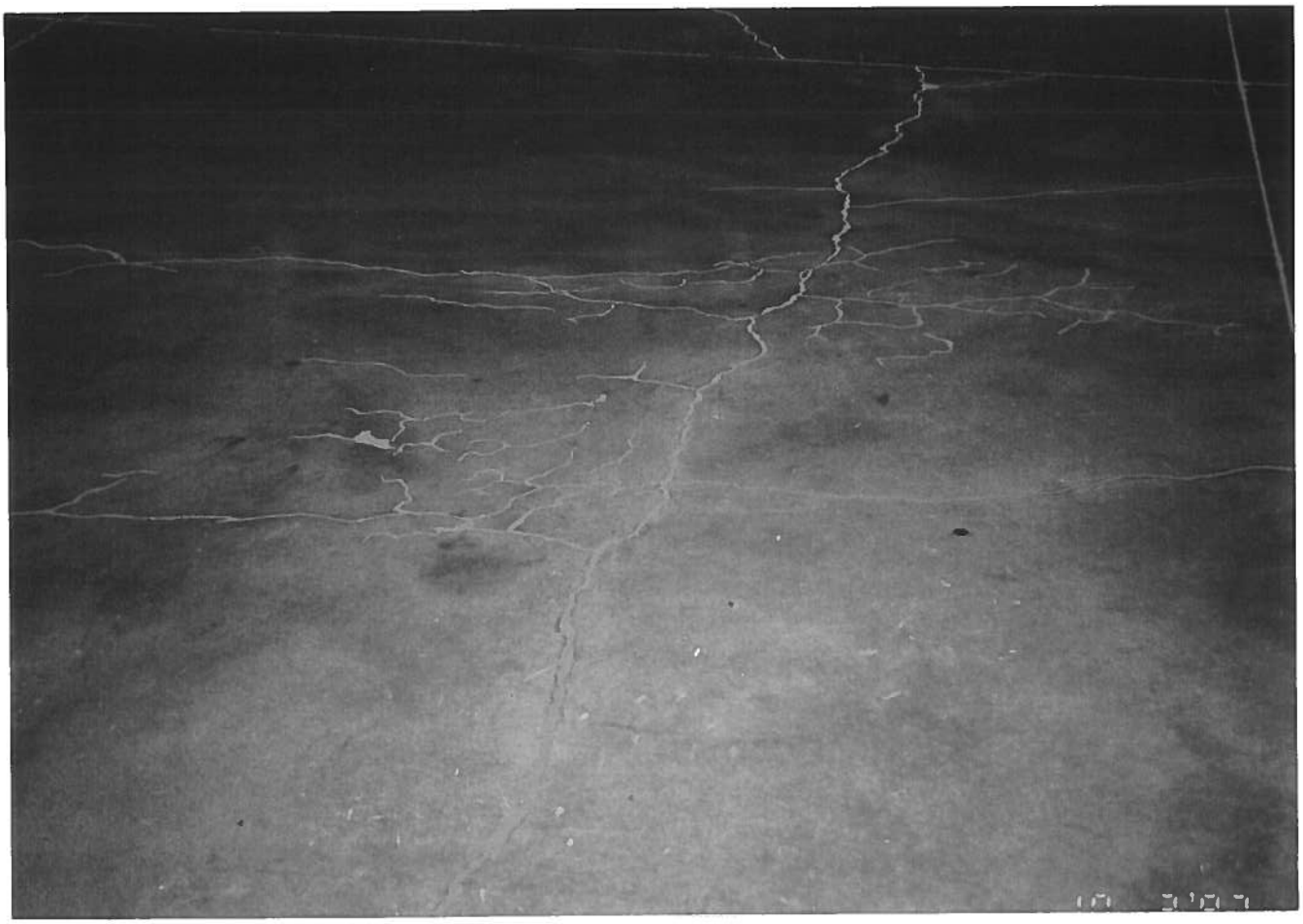


PHOTOGRAPH 21 (ABOVE): View of surface cracks in concrete surface at SWMU #26 after cleaning and prior to sealing.

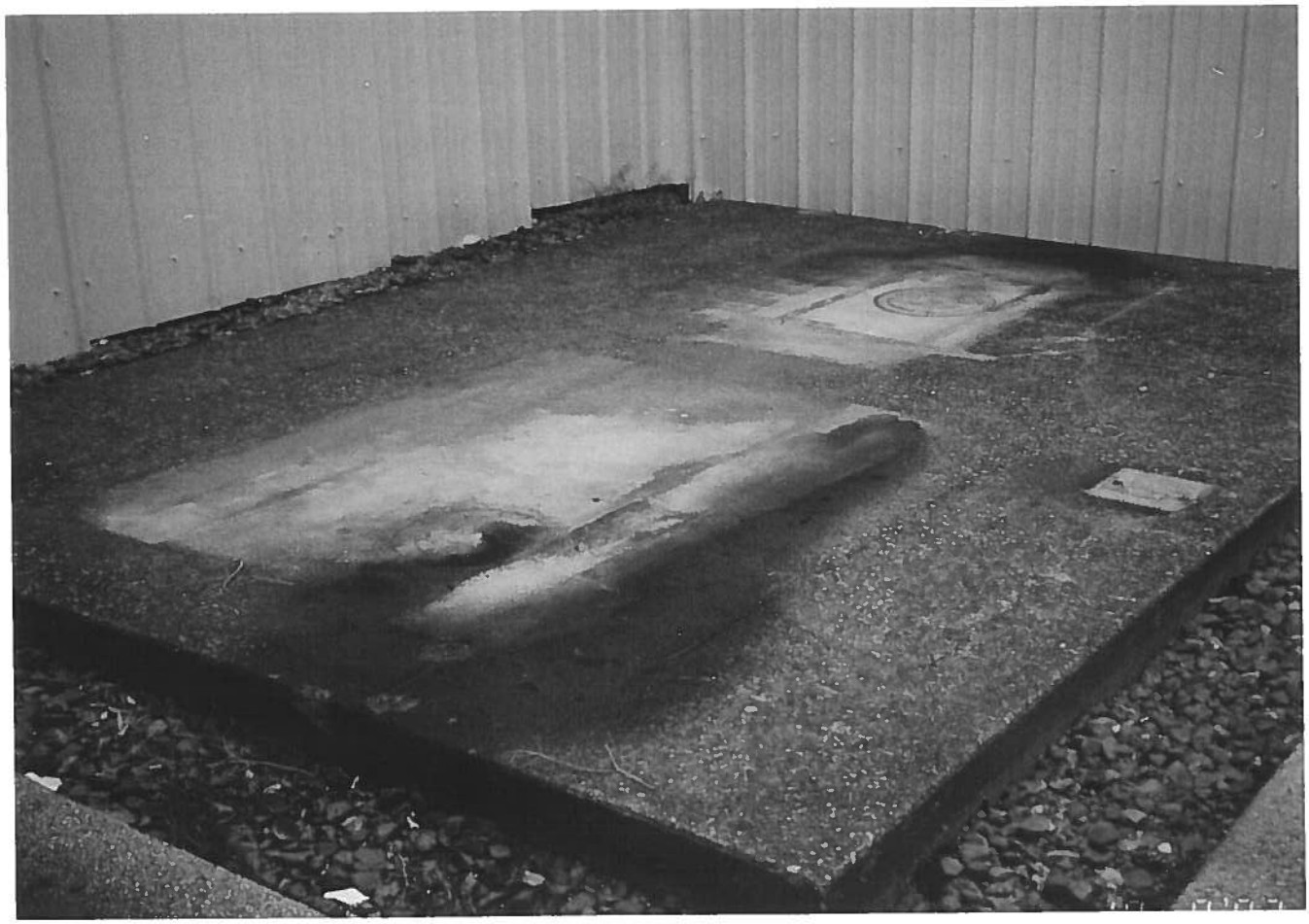
PHOTOGRAPH 22 (ABOVE): View of sealed cracks at SWMU #26.

PHOTOGRAPH 23 (ABOVE): View of sealed cracks at SWMU #26.

PHOTOGRAPH 24 (ABOVE): View of sealed cracks at SWMU #26.



PHOTOGRAPH 25 (ABOVE): View of sealed cracks at SWMU #26.



PHOTOGRAPH 26 (ABOVE): View of concrete pad for former power transformer at SWMU #28. Power transformer was removed for cleaning and disposal. View of concrete pad prior to cleaning activities. Note two stained areas left and right of photograph.

PHOTOGRAPH 27 (ABOVE): View of concrete pad at SWMU #28 after completion of pad cleaning activities.

PHOTOGRAPH 28 (ABOVE): Close up view of right side of concrete pad at SWMU #28 prior to cleaning.

PHOTOGRAPH 29 (ABOVE): Close up view of right side of concrete pad at SWMU #28 after cleaning.

PHOTOGRAPH 30 (ABOVE): Close up view of concrete pad at SWMU #28 prior to cleaning.

PHOTOGRAPH 31 (ABOVE): Close up view of concrete pad at SWMU #28 after cleaning.

2

APPENDIX 2

Laboratory Certificates

Environmental Analysis, Inc.
3278 North Hwy. 67 • Florissant, MO 63033 • 314-921-4488

Mr. Elmer Dwyer
BOEING COMPANY
P.O. Box 516, Dept. 064C
Bldg. 110 Mail Code 1111099
St. Louis, MO 63166

PAGE NO.: 1
REPORT NO.: 72007
DATE : 12/12/97
P.O. NO.: F73318C

REPORT OF ANALYSIS

SUBJECT: Analysis of waste samples in accordance with SW-846: Test Methods for Evaluating Solid Waste - Physical/Chemical Methods, 3rd Edition, 1986; where applicable.

Sampling and PCB analysis of soil surrounding transformer pad, as requested by Mr. Elmer Dwyer.

LOG NUMBER	SAMPLE DESCRIPTION	RESULTS OF ANALYSIS	UNITS OF MEASURE	METHOD NUMBER	NOTE
1912534	West & South Soil Comp 0-12" c SAMPLE DATE: 10/15/97				
	Gas Chromatog. Prep.	1	ea.	4.2.1	
	PCB's	1.4	mg/kg	8080	(1)
1912601	West Soil 12-18" c SAMPLE DATE: 10/15/97				
	Gas Chromatog. Prep.	1	ea.	4.2.1	
	PCB's	< 0.2	mg/kg	8080	
1912602	South Soil 12-18" c SAMPLE DATE: 10/15/97				
	Gas Chromatog. Prep.	1	ea.	4.2.1	
	PCB's	< 0.2	mg/kg	8080	

FOOTNOTES

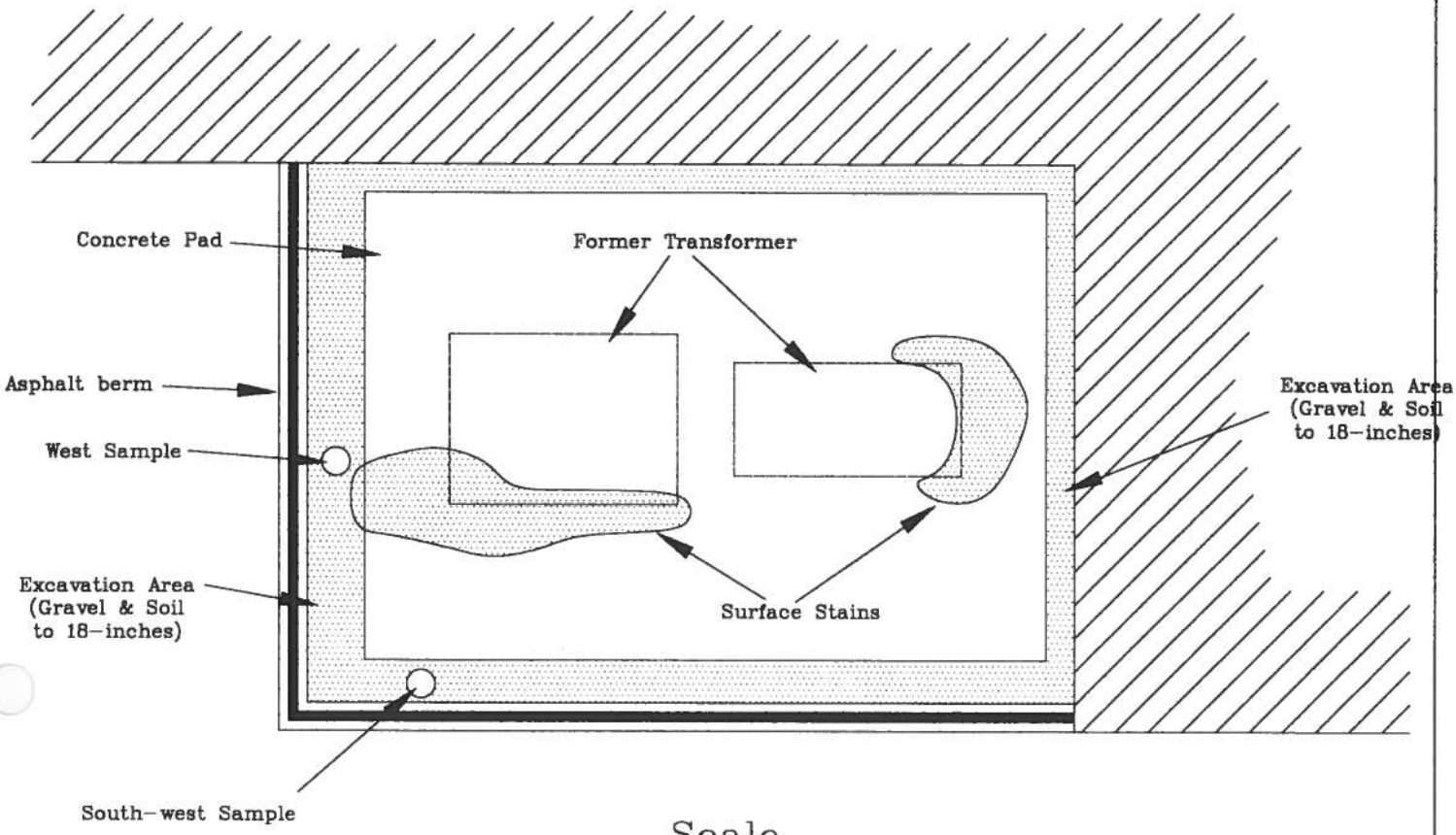
(1) Calculated as type 1260

RESPECTFULLY SUBMITTED
R. M. DERRIS

APPENDIX 3

Figures

Building 6 Interior



Scale

NORTH

McDonnell Douglas Aerospace
Hazelwood, Missouri

Plan View of SWMU #28
Concrete Pad, Excavation Area, and Soil Sample Locations

REVISIONS MDA.DWG	HERITAGE ENVIRONMENTAL SERVICES, INC.		
	DRAWN BY	DATE Dec. 17, 1997	FIGURE 1
	APPROVED BY	SCALE See Bar Scale	JOB NO. 54157